

Along the Boundary Between
California and Mexico.
Jany. 15 to April 1 1903.
By Frank Stephens.

Itinerary.

Left San Diego Jany. 15. Camped near mouth of Tia Juana River 18 - 19.
At Tia Juana 20 - 22. In Tecate Valley 24 - 30. (Stormy with occasional showers). Storm bound at Campo Feby. 1 - 6. (ten inches of snow)
At Jacumba 8 - 9. Drove to the edge of the Colorado Desert 11th.
Reached New River at Cameron Lake 14th. Passed out of the old lake bed at monument 217 18th. Reached Pilot Knob on the Colorado River 21, remaining there until commencing the return journey March 12. Got back to Tia Juana 26th.

Brief Description of the Region Traversed.

The Tia Juana River is a wet weather stream heading in the mountains near Campo, passing through canons most of the way, emerging from the last canon about 12 miles from the sea.

The mesa between the foothills and the sea is a gravelly adobe, carrying a small amount of brush (chemisal) and perennial plants. After wet winters there is a good growth of annuals. The creek bottom below the mountains is sandy carrying more or less willows, arrowweeds, sycamores and cottonwoods until within a mile of the sea, where the low land is partly overflowed by the tide, which comes in through a narrow gap in the row of sand dunes along the beach. This low ground is covered above the mid tide line with the usual salt marsh vegetation. On the mesa south of the creek bottom, near the ocean, occurs *Agave shawii* and an *Opuntia* not found north of the creek. The little Mexican town of Tijuana is six miles from the sea, on the south bank of the river.

Dulzura, Cal. is a mesa valley four to six miles north of the junction of Tecate and Cottonwood creeks, which form the stream known below as ~~Tecate~~ River. The altitude of the junction of the creeks is about 700 feet, while that of Dulzura is 1100 to 1200. Marsh's ranch, which is the type locality of *Ferognathus femoralis* and several other species, is in the southern part of Dulzura, and is mostly chemisal, growing in a granite region. I did not go to Dulzura this trip.

Tecarte Valley, Lower California, is a long-barreled valley or creek

bottom lying among granite hills. These hills are thickly covered with cemisal with a few live oaks in the gulches, much of the valley is wet and overgrown with salt grass, zuncus, etc., with a few small patches of tulles. The drier parts of the valley are rudely cultivated by a number of Mexican families scattered along the valley. Tecar Mountain (Cush - e - mah) lies north west of and close to Tecarte Valley at its western end. The boundary line crosses the mountain a little south of its highest part which is about 4,000 feet alt. The Tecarte Cypress grows along the western side of the summit. This is the only locality known to me for this tree.

Campo, California is two miles north of the boundary, 50 miles by road from San Diego and 12 miles from Tecarte (store). Campo is at the lower end of Milquatay Valley, an alkaline, salt grass flat of a few hundred acres, surrounded by cemisal and oak covered granite hills. Alt. 2450.

Zacumba, California is the old stage station at the Jacumba hot springs, in the western edge of the Jacumba Valley. It is 23 miles east, by wagon road, of Campo. Half a mile south of the springs is monument 232 of the boundary. The alt. of the springs is 3,000 feet. They are a few miles east of the divide, the water draining north east into the Colorado Desert. This is an arid valley from its proximity to the Desert. Some pinon and juniper trees and desert agavos occur here, but are more abundant on the high ridge between the valley and the desert. Much of the vegetation is of the arid forms common further eastward.

That part of the Colorado Desert lying along the boundary is of two distinct types:- the true desert, extending from the foot of the mountains to the old lake beach, a distance of 15 miles, commencing at the eastern beach and continuing about 30 miles to the river bottom at Pilot Knob; - second, the alluvial soil deposited by the old lake and river, about 20 miles wide at the boundary. The surface of the mesa part of the Desert is sand and gravel with a little loam, with drifts and mounds of pure, wind driven sand occurring more or less frequently. There is a sparse vegetable growth of cactuses, *larrea*, mesquit, ironwood, etc. After rains of sufficient amount to soak the ground thoroughly a considerable quantity of annuals springs up and ripens in a brief period. The old lake bed bears in places a growth of mesquit, willow, arrowweed, etc. identical with that of the Colorado River bottoms. This growth dwindles away as one gets further from the river until it is found only in places along the

channels that carry water most frequently, and the remainder of the alluvial soil is often as bare as an asphalted street for miles. Some of this alluvial soil is alkaline, and northward, in the Salton basin occurs a surface deposit of salt, now worked commercially. A company is now making canals and ditches with the intention of reclaiming by irrigation a large part of the old lake bed. Those places irrigated last summer indicate a successful issue for the scheme.

Calexico is on New River channel, above Cameron Lake.

Pilot Knob is an old, well known desert landmark consisting of a group of hills or low mountain standing on a corner of the desert mesa at the Colorado River. Here the bottom lands of the Colorado begin to widen rapidly: some of the old channels curving west and north west into the old lake bed, which blends imperceptibly with the river bottom lands. The hills comprising the "Knob" are metamorphic and broken. They are barren, having a very sparse growth of small desert shrubs. I obtained very little in these hills, most of the material labeled Pilot Knob having been obtained in the well timbered bottoms along the foot of the Knob, from 8 to 12 miles below Yuma.

Birds

noted along the Southern California Boundary

January 15 to April 1 1903.

The birds seen on the outward trip were all residents or winter visitants. Some migratory movement was observed on the return journey.

The water birds were mostly common species and I paid but little attention to them. Birds in general were scarce, partly owing to the stormy season.

— *Anas diazi*. Seen at Cameron Lake and Pilot Knob.

— *Nettion carolinensis*. Shot at Cameron Lake. Saw a few also at Pilot Knob.

— *Aythya americana*. Saw a small flock at the diverting dam above Calixto.

— *A. affinis*. Pilot Knob. Not common.

I heard Geese near Cameron Lake. "White" geese were said to be feeding on the fields of young grain.

— *Ardea herodias*. Salton River. Colorado River. Not common.

— *Nycticorax nycticorax naevius*. Saw three in willows on the bank of the Colorado River March 10th.

— *Crus mexicana*. Heard at Pilot Knob.

— *Fulica americana*. Saw a few at the diverting dam above Calixto.

— *Gallinago delicata*. Seen in Tecate Valley in January, and I heard their song there on the night of March 23rd. I saw four standing together on a bit of driftwood at the edge of a slough at Pilot Knob in February.

— *AEgialitis vocifera*. Seen in Tecate Valley and along the Colorado River and its sloughs.

Crocyx pictus plumiferus. I saw a few on the ridge east of Jacumba and three on the western foothills, at about 800 feet elevation.

Had no gun with me either time.

Lophortyx californica vallicola. More or less common from the coast to Jacumba. Most abundant south of the boundary, as Californians are not allowed to hunt there without special permits from the local and national authorities.

— *Lophortyx gambeli deserticola*. Seen from the eastern foothills to the Colorado River, but in small numbers.

— *Zenaidura macroura*. Heard at Cameron Lake Feb 17. Seen at Pilot Knob and on western slope in March.

Cathartes aura. Seen occasionally.

— *Accipiter velox rufidatus*. Seen near Tia Juana, at Tecate Valley and Pilot Knob. A. C.

A. cooperi. Saw one at Tia Juana.

Parabuteo unicinctus barrisi. Saw one sitting in a cottonwood tree on

the opposite bank of "Salton" channel, about five miles south of monument #215.

Buteo borealis calurus. Seen occasionally. East of Calexico, near the Salton channel, I saw a partly lined nest in a willow, with a bird of this species near.

Archibuteo ferrugineus. I saw one near Campo Feby. 7th.

Aquila chrysaetos. Saw one in the western foothills ~~Jan'y. 22nd~~.

Falco anatum. Saw one at Cameron Lake.

F. sparverius deserticola. Saw one near Tia Juana in January, and another on Mt. Tecarte.

Strix occidentalis. Heard near Tia Juana.

~~*Megascops asio cineraceus?*~~ Heard in February at the Salton channel and a few days later at Pilot Knob.

— *Bubo virginianus pacificus*. Seen at Campo. Great-horned Owls were also heard at Cameron Lake and Pilot Knob; these may have been *pallescens*.

Speotyto cunicularia hypogaea. Seen only near Tia Juana the last days of March.

— *Geococcyx californianus*. Seen occasionally throughout the region traversed.

— *Ceryle alcyon*. Seen at Pilot Knob.

— *Dryobates scalaris bairdii*. Three seen in the timber of the Colorado bottoms.

— *Melanerpes uropygialis*. Seen occasionally in the Colorado bottoms.

— *Colaptes cafer collaris*. Seen occasionally wherever the timber was large enough to shelter them.

— *Phalaenoptilus nuttalli*. Heard at Pilot Knob early in March.

Calypte anna. Saw one near Tia Juana in January. Very few Hummingbirds were seen, and usually could not be recognized.

Sayornis saya. Saw one at the Salton channel Feby. 20.

— *S. nigricans semipatra*. Seen at Tia Juana, Cameron Lake and Pilot Knob.

— *Pyrocephalus rubineus mexicanus*. Two males were shot near Pilot Knob early in March. Not seen elsewhere.

Otocoris alpestris actia. Seen only near Tia Juana.

Aphelocoma californica obscura. Seen at Campo and on Mt. Tecarte.

— *Corvus corax sinuatus*. Seen occasionally all along the route traveled.

C. americanus hesperis. Seen only at Campo. This flock was very wary.

Cyanocephalus cyanocephalus. Saw a small flock in the pinons east of Jacumba March 20.

Molothrus ater. Saw a few at Yuma and Pilot Knob.

- *Agelaius phoeniceus sonoriensis*. Rather common at Yuma and Pilot Knob.
- *A. p. neutralis*. Saw two at Jacumba with a flock of Brewer Blackbirds.
- *Sturnella magna neglecta*. Rare at Yuma. Rather common at Campo and Tecarte.
- Icterus pariserum*. Saw one at Tia Juana March 27.
- Scoloprophagus cyanocephalus*. Common.
- Carpodacus mexicanus frontalis*. Tia Juana and Jacumba. Not common.
- Astragalinus psaltria*. Saw a few at Tecarte and Campo.
- *A. lawrencei*. Saw a small flock at Pilot Knob.
- Anisognathus beldingi*. Rather common in the salt marsh at the mouth of the Tia Juana River.
- A. rostratus*. Same place. Rare.
- Chondestes grammacus strigatus*. Tecarte and Campo. Not common.
- *Zenotrichia leucophrys gambeli*. Abundant.
- Z. coronata*. Seen at Campo, Feby. 5.
- Spizella atrogularis*. Heard at Tecarte Valley March 23.
- Junco hyemalis thursuri*. Tecarte and Campo. Not common.
- *Amphispiza belli nevadensis*. Saw a few near Jacumba. Occasional in the Colorado valley.
- *Melospiza cinerea pallax*. Rather common about the Colorado River.
- *Aimophila rupestris*. Saw one on Mt. Tecarte.
- *Fipilo maculatus megalonyx*. Noted only at Tecarte and Campo. Not common.
- F. crissalis senicula*. Common in the mountains.
- *P. aberti*. Rather common in the Colorado bottoms and along the channels running toward Salton Lake.
- Calamospiza bimaculata*. Saw two March 28 at the boundary five miles east of Tia Juana.
- *Tachycineta bicolor*. Saw a flock at Cameron Lake in Feby. and a few at Pilot Knob a fortnight later.
- T. lepida*. Migrating near Calexico March 19.
- *Stelgidopteryx*. Yuma. Not common.
- *Phainopepla nitens*. Colorado Valley. Not common.
- *Lanius ludovicianus excubitoroides*. Ditto. Ditto.
- Lanius l. gambeli*. Saw one near Tia Juana.
- *Dendroica auduboni*. Rather common near Tia Juana. Seen occasionally at Cameron Lake and Pilot Knob.
- *Anthus pensylvanicus*. Saw a few near Tia Juana and Pilot Knob.
- Mimus polyglottos leucopterus*. Saw one at Tia Juana and another in Tecarte Valley.
- *Toxostoma recurvirostris pasadenensis*. Seen at Tia Juana, Campo and Jacumba.

- *Toxostoma lecontei*. Heard one singing near monument 215 and another at Pilot Knob. Not noted elsewhere.
- *T. crissalis*. Seen at Pilot Knob and Salton channel.
- *Heleodytes brunneicapillus bryanti*. Heard one a few miles east of Tia Juana Jany 22.
- *H. b. anthonyi*. Pilot Knob. Rare.
- *Catherpes mexicanus punctatus*. Saw one at Campo "eby 4
- *Trochocercus bewicki charienturus*. Seen occasionally in the mountains.
- *Cistothorus palustris paludicola*. Tia Juana and Tecarte Valley. Rare.
- *Parus inornatus*. Saw one at Campo.
- *Chamaea fasciata*. Heard occasionally in the coast region.
- *Psaltriparus minimus*. Tecarte Valley Jany. 24.
- *Auriparus flaviceps*. Pilot Knob. Not common.
- *Regulus calendula*. I think I saw one at Pilot Knob.
- *Polioptila plumbea*. Seen occasionally at Pilot Knob and a few miles west.
- *Hylocichla acnalaeschkae*. Tia Juana and Tecarte Valley.
- *Merula migratoria propinqua*. Seen at Campo, Jacumba and Pilot Knob.
- *Sialia mexicana occidentalis*. Campo and Pilot Knob.

Mammals

noted along the southern California boundary

Jany 15 to April 1 1903.

by Frank Stephens.

Odocoileus californicus. No Deer seen. I saw one track in the snow midway between Campo and Jacumba Feby 7. Three days later I found many old tracks on the ridge east of Jacumba. But none made since the snow fell. The Deer had probably gone down the eastern slope below the snow line, into a very broken region out of my line of travel.

Antilocapra americana. I saw Antelope tracks in the waterless region between the eastern foot of the mountains and the old lake bed. Some were quite fresh. They are said to water at the salt lake 20 miles south of the boundary. The cowboys say they are very wild and difficult to approach.

Ovis nelsoni. I saw old Bighorn droppings near monument 250. but no recent signs of their presence. A Mr. Jenkins told me that he saw 17 Bighorns in one band 40 miles south of the boundary, in the hills west of the head of the Gulf of California, a week previously and had killed five of them, all small ones.

Spermophilus tereticaudus. Seen only around Pilot Knob, where they were rather common. Silent.

S. beecheyi fisheri. These Ground Squirrels do not really hibernate, but in cold weather they come out of their holes only in the middle of the summer days, therefore we did not see many of them at this season. They are common from the summit to the coast.

Amnospermophilus leucurus. First seen at Jacumba, which is at the western edge of their range. Saw but two or three, as the weather was cold. For the same reason we saw but few in the Desert.

Castor canadensis frondator. I had traps out for beaver ten nights, but caught none. I came to the conclusion that several Beaver lived along that five miles of the Colorado bank that I worked. They are evidently wary, and seem to choose a new place to come out each night. I found very few trees cut, these being mostly small willow saplings. They frequented places where small, but dense, thickets of canes overhung the banks, and I saw some canes cut. I fancy they were feeding principally on canes. These Beaver have a queer, cat-like habit of scratching on steep banks of soil, 15 to 30 inches above the water. These scratches usually cover an area of 3 or 4 inches wide by a foot long perpendicularly. The scratches are superficial and I can see no object in them. Mr. Collins, the engineer of the pumping works 8 miles below Idra, on the California

side, told me that he shot a Beaver two years ago, by moonlight, as it was swimming along near the bank. I was told that an old trapper by the name of Carter caught 200 Beaver in the winter of 1801-2, between Yuma and the Guli, mostly in side channels.

Sigmodon sp.? Found by me only in one locality, Hanlons old field 8 miles below Yuma, at the base of Pilot Knob. The field is overgrown with weeds and cane. One was caught in cane, the others in a patch of dry weeds growing waist high. There were dim runways in this weed patch, but I saw no runways elsewhere. Mr. Herbert Brown at Yuma showed me skins of *Sigmodon* caught two miles east of Yuma in a large patch of cockle burs, that seemed to agree in measurements with those of the *Sigmodon* that I caught near Ehrenberg. These Pilot Knob specimens seem to have longer hind feet and shorter ears than the others.

Reithrodontomys longicaudus pallidus. Taken near the mouth of the Tia Juana River and in Tecarte Valley.

P. megalotis deserti. Pilot Knob. Not rare, yet not very common. I caught them in weed patches, cane and brush.

Neotoma fuscipes macrotis. "Nests" seen in brush frequently from the sea to Jacumba.

Neotoma cuniculator? (*venusta*?). Pilot Knob. Caught in rock crevices, and in brush, where they had small "nests".

Peromyscus eremicus. Pilot Knob, common. More or less common throughout the Desert region.

P. e. stephensi. I passed the type locality, going and coming, but could not arrange to camp there. This type locality is a very small spring in the bed of the canon ~~three~~ miles below Mountain Spring. There was scarcely a bucketful of alkaline water there and no feed for horses. The locality is barren. Mice obtained at Jacumba seemed to be of this form.

P. e. fraterculus. Common from Campo to the sea.

P. californicus insignis. Common in the mountains from the edge of the mesa to the summit. Usually found in thick brush.

P. gambeli. Common from the sea to the Desert.

Onychomys ramona. I found this species only near the mouth of the Tia Juana River and in the Tecarte Valley. Probably it occurs in the intervening region. They were not common, though more so than I have found them for years.

Microtus. I saw old runways in the salt grass in Tecarte Valley and trapped for them but failed to get any.

Fiber zibethicus pallidus. While rowing up the Colorado at Pilot Knob looking at beaver traps, I saw a Muskrat swimming 100 yards below. It appeared to land on a snag covered with drift brush. I dropped a rifle ball there but saw no more of it. None of the traps put out for Muskrats were disturbed. Residents say that Muskrats are rather common in the river and sloughs.

Thomomys bottae. Rather common from the sea to Campo.

T. perpallidus. Rather common at Pilot Knob. I saw lines of mounds in many places on the desert mesa and among the sand hills. The Cope probably drown out in the lower bottoms that are regularly overflowed.

Perodipus agilis. Common from the sea to Jacumba.

Dipodomys merriami simiolus. Rather common at Pilot Knob, but I saw less indications of their presence elsewhere.

D. deserti. More or less common throughout the Desert.

Perognathus penicillatus angustirostris. Common all through the Desert. *P. fallax*. Less common than usual on the western slope of the mts.

Lepus floridanus sanctidiegensis? Common from the summit to the coast.

Lepus trowbridgei cinerascens. Seen frequently while riding through the brush between monuments, where I could not carry a gun. Probably does not occur east of Jacumba.

L. californicus. Seen occasionally from the sea to the summit, sometimes in brush, but more often in open valleys.

L. texanus eremicus. Found sparingly from the eastern base of the mountains to the Colorado River. I saw none within several miles of the type locality, but I found them common a few miles south of there in the wash below monument #230. This was the only place where they were common.

Procyon pallidus. Caught one at Pilot Knob, another carried off a trap. Saw ~~seen~~ tracks frequently along the Colorado River and the channels westward.

Spilogale phenax? Saw tracks in the snow at Campo of a small Skunk.

Mephitis estor. One caught at Pilot Knob. But few tracks seen.

Canis Coyotes were often heard and sometimes seen throughout the region traversed.

Lynx Bobcat tracks were occasionally seen in the bottom lands, and they were probably rather common there. Caught one at Pilot Knob.

Myctis Yumanensis? Common at Pilot Knob, apparently spending the day in crevices of the rocks.

Vesperilio rufus. Less common than the preceding at same place. No bats were seen elsewhere.

San Jacinto Mts. Cal.

General Description.

This range lies in Riverside County and southwesterly of the San Bernardino Mts.. Its direction is northwest to southeast, and it is 30 miles long by 15 miles wide. Its highest peak (San Jacinto Peak) is almost 11,000 feet in altitude, but the remainder of the range runs from 5,000 to 7,000 feet high. The whole range is bold and rugged and has no streams of any size. It is well forested above 5,000 feet. The only wagon roads are two on the southern side and a short one on the north side. The principal one comes from the town of San Jacinto. Strawberry Valley is more of a mesa than valley. It is on the southwestern side of San Jacinto Peak, and is partly enclosed by hills to the northward and a higher ridge to the southeast. It is about three miles long by one wide, and was well forested with yellow pine, fir, oak and cedar. The rest of the pine has been logged out. The altitude is 5,000 to 6,000 feet. The greater part of the valley has passed into the hands of a company who have established a sanitarium in the valley.

Taquich Valley is another mesa about five miles northeast of Strawberry Valley, and 2,500 feet higher. The forest there is fir and yellow pine. There are a few patches of brush (chinquapin and Ceanothus) in and around the valley. Still higher on the trail to the Peak are two or three quite small valleys, but the snow was so deep that it was not practicable to take pack horses up there at the time of our visit. As it was it was difficult to get them over the ridge into Taquich. We were the first ones over the trail this season. The snow was in drifts in Taquich, covering more than half the surface on our arrival there April 29th. We remained there until May 2nd.

San Jacinto Mountains, Cal.

April 24 to May 7 1903

Mammals.

Odocoileus californicus. On Taquich Valley we saw tracks in plenty made before the winter snows fell, but saw but one recent track. Below Strawberry Valley tracks were more common, though we saw but two Deer, an adult female and a yearling with her. We got the female *SCIURUS griseus anthonyi*. Rather common throughout the pine region up to 9,000 feet altitude at least. I saw one in spruces at 3,000 alt, the lowest I know of here.

Eutamias speciosus. Common in thickets of brush around Taquich Valley. None appeared to be breeding yet but as nearly all taken were males it may be that the females were just having young and were not in evidence.

E. hindsii merriami. Most common at the lower edge of the pines, but a few were seen nearly up to the range of *speciosus*. Several suckling females were taken, but no young of the year were seen.

Spermophilus beecheyi fisheri. We saw few at first, but toward the end of our stay this species became common, so much so as to be a nuisance by getting into traps baited with meat for foxes, etc. They did not appear to be breeding yet.

Neotoma fuscipes ss.? Not common. One male contained large foetuses. Some 'nests' were piled in bushes and others were under rocks.

Peromyscus sp.? A big-eared mouse that I cannot place in the field was rather common around logs and rocks near or among thickets of brush in Strawberry Valley. Also taken in Taquich Valley but not common there.

P. gambeli. Generally distributed.

Thomomys fulvus nigricans. Abundant in Strawberry Valley, but from some reason, probably because of the softness of the soil from the recent melting of the snow, we did not succeed in catching many. *T. sp.?* Those gophers taken in Taquich Valley seem to resemble *monticolus* of the high Sierras in texture of pelage. They were common, but we failed to get out two in traps. One large, bruised individual was found lying dead on the surface.

Spilogale phenax. Caught one at the foot of the mountain.

Mephitis occidentalis holzneri. Rather common in Strawberry Valley. A female was suckling young.

Urocyon californicus. Rather common in Strawberry Valley and to the foot of the mountain; in Taquich Valley we saw but one track and did not succeed in catching any. The type of *californicus* came from Taquich Valley. The female taken at the foot of the grade was suckling young, those taken above had not bred.

(*Vulpes macrotis*) I caught two about three miles west of San Jacinto May 9th. at a burrow in a pasture, in open level ground. I set traps in three mouths of the burrow the previous evening, one mouth I did not then discover, it being hidden under growing vegetation. At daylight I found a female in one trap, the other traps not being disturbed. I left the traps set and returned about 8 o'clock and found the male caught in another trap. This burrow had two double entrances, the latter being about three feet apart. The two pairs of entrances were 15 feet apart, and went down rather steeply. These foxes were spirited and full of fight, jumping at me to the end of the trap chains, growling and snarling. I have seen several burrows of this species, and all were on level ground in plain or valley clear of brush or perennial vegetation. I do not think this species ever is found in foothills or mountains or in brushy ground.

Felis oregonensis. A puma was seen in Strawberry Valley while we were there, and next day my teamster saw a fresh track three miles away.

Scapanus anthonyi. Mole runs were common among the pines, but we did not succeed in catching any.

I saw two bats one evening but did not recognize the species.

STRAWBERRY VALLEY, SAN JACINTO MOUNTAINS.

San Jacinto Mountains, California.

April 24 to May 7, 1903.

Biros.

Crissalix picta pallidiorum. Heard and seen occasionally from 2,500 ft. up to as high as we went. Most common around Strawberry Valley. Several shot.

Coldrenia insolita. A small flock was seen at the lower edge of Strawberry Valley.

Zenaidura macroura. Strawberry Valley, rare; common at the foot of the grade.

Puteo borealis colorus. Saw one only.

Palaeospizopsis deserticola. Saw two or three in Strawberry Valley.

Asio scopularis canairei. One shot on April 29th.; another heard later.

Zenaidura virginianus pallidescens. Heard occasionally, but apparently all the notes came from one pair. Toward the end of our stay a particular pair of these were regularly roosted on their nail without any tracks being used around them. We set snares about the last night of our stay and next morning found a female Owl in one. She had incubated some time previously.

Dryobates villosus harrisi. Saw one at lower edge of the valley April 24th.

Xenopsis albicularis. Saw one near the last, a very low altitude for this species; seen occasionally higher; one shot.

Catherpes thyrodes. Saw but one, which was shot at 8,500 ft.

Melanerpes formicivorus bairdii. Rare on our arrival in Strawberry Valley, but gradually became common before we left; not seen higher.

Colaptes caeruleus collaris. A few seen in before our departure.

Trochilus albogularis. Saw a male about half way up the grade or so went up; no other number seen.

Hylocharis cinnamomea. Saw but two or three.

Sapayoza hypoleuca. Saw one in Strawberry Valley.

Coronula dumicola. Heard occasionally in Strawberry and Tafton Valleys.

Trochocercus stellifer frontalis. Common; set of snares taken May 3rd. in a cedar.

Apnelocoma californica occulta. Seen nearly up to the valley; common in the foothills and nearly up to the pines.

Cyanocitta cyanophaea. Seen twice in Strawberry Valley. Seen up to 10,000 ft. around the slides at the mountainous.

Carpodacus cassini. Saw a male May 6th. His song was much lower than that of cedar-crested.

Zenaidura macroura (Gambel). A few instances were seen; some of these may have been immatures.

Zenaidura macroura (Gambel). Saw a few.

S. atricapilla. Heard two on the way up at 2,600 and 3,800 alt.

Junco hyemalis thurberi. Rather common.

Fascerilla albica stephensi. Rather common in the chinquapin and Gambelus patches in and above Taquich Valley; kept close in the bushes, seldom coming into the pines; one heard singing in a fir song low as if not in full song, the song was sweet.

Faurea maculata maculata. Rather common below the pines; but one or two heard in the pines.

F. rufa (Linnaeus). Seen nearly up to the pines.

Crotophaga sulcirostris. Saw several in Taquich Valley; these may have been migrants, but some were there and higher.

Tachycineta thalassina lepida. Rather common in Taquich Valley, where they were selecting nesting sites; one pair had selected a nest site in an old pine in Strawberry Valley April 26th.

Vireo solitarius cassini. Heard along the creek below Strawberry.

V. vicinior heard at the foot of the grade at about 2,800 alt.

Dendroica auduboni. Common; a few heard toward the top of the mountain.

D. nigrescens. Was rarer than the preceding, but occasionally heard and seen.

Toxostoma r. gracilis . . . Saw one part way up the grade.

Zenaidura aidae franklini. Seen occasionally up to base of the pine.

Leptasthenura familiaris occidentalis. Saw one at the upper end of Strawberry Valley, May 2nd.

Sitta canadensis amurensis, Ran

S. pygmaea, Rather common in Taquich Valley, less so in Strawberry.

Parus gambeli Ran in Strawberry Valley.

Chimarrua fasciata. Rather common near the lower end of the pines

Microtus lateralis, Papinque. Saw one in Tapijoc Valley.
Sialia mexicana decoloralis. Common.

Lytle Creek, California.

General Description.

Lytle Creek drains that part of the San Gabriel Mountains that lies in San Bernardino Valley; i.e. the eastern end. The three branches unite about four miles above the mouth of the canon. The creek and all its branches lie in deep canons, making it a very rugged region. The rock is principally granite. The lower slopes are thickly covered with chemisal, this brush reaching up to 5,000 alt in places. The steeper slopes, facing northward are more or less thickly timbered with fir and yellow pine. Scarcely any oaks occur. Along the streams is a strip of mountain alders mixed with willows in places. High in the canons are many springs. The streams formed by their union ~~saddle~~ run far before sinking in the masses of boulders and gravel forming the floors of the canons, but these streams rise again in places forming cienegas. These are often dense groves of mountain alders and willows, but in places there are open patches of good soil matted over with a heavy growth of grasses, aquatic plants and shrubs. The water in all these springs and streams is exceptionally pure and cold. Trout are plenty when not overfished. The region has an individuality of its own, from its ruggedness, its abundance of spruce, and its cienegas. Good roads of easy grades make it easily accessible from the San Bernardino Valley as far as the forks.

Lytle Creek, California.

Mammals.

July 8 to 26 1903.

Odocoileus hemionus californicus. Deer are rather common here, tho I saw but one, and did not get that one. It was very light colored, a yellowish red. A doe with two fawns were seen while I was there. I saw deer tracks from the foot of the mountains to as high as I went. They bedded principally in the thick chemisal, occasionally in small patches of scrub oaks and other brush.

Ovis cervina. I spent the greater part of my time here hunting bighorn here, but without success. Mr. Pardew accompanied me. He is familiar with the region and has killed quite a number of bighorns here, twenty or more he thinks, but he killed the last one six years ago and had not hunted them since. Mr. P. got a glimpse of two while temporarily separated from me. These were the only ones either of us saw, though we saw quite a number of fresh tracks. I saw no very large tracks, such as would be made by a large ram. There are few bighorns left at this end of the range, perhaps not more than half a dozen. There is said to be a band of ten on the northwest side of the range and this information comes from a reliable source. While they are supposed to be thoroughly protected by law poachers are rapidly exterminating them. I have a fancy that these bighorns are of the Sierra Nevada form; not the desert form (*nelsoni*).

The vertical range of the bighorns here is from 5,000 feet alt. up to the summits of the highest peaks, but principally between 6,000 and 7,000 feet. This band now ranges over parts of the following Townships - 2 north 7 west and 3 north 7, 8 and 9 west. i.e. in the region east, north and northwest of "Baldy" or San Antonio Peak, in the watershed of Lytle Creek, San Antonio Creek, Rock Creek, Little Rock Creek, and perhaps the extreme headwaters of the San Gabriel River. They frequent the very roughest part of the San Gabriel Mountains, where the canons are very deep and bordered by very steep cliffs. They occasionally go out on the steep, pine covered slopes of the higher ridges, but we saw scarcely any tracks higher than 7,000 alt. Above that height the forest is comparatively open and patches of prish are low. Water in springs and streams

Mammals 2.

is plentiful, but they seem to seldom go to the streams in the bottoms of the canons to drink, preferring the little springs in the side gulches. I came to the conclusion that they did not drink often, perhaps but twice or thrice a week. The weather is cool, even now at the end of July, at this height; the bighorns are abroad but little in the warm part of the day; their food is green; therefore it is reasonable to think that they do not need much water.

I saw little tracks, apparently those of lambs. I believe these bighorns do not remain many days at a time in one place, but move about to others a mile or two, or perhaps four or five miles distant. This band probably does not go off the Lytle Creek watershed, or only over into that of San Antonio Creek. I think that the range of the other band scarcely meets that of this one. At this season this band is scattered. I did not see tracks of more than two in a place but Mr. P. thought he saw evidences of four or five together in one place. I am inclined to discount his statements in some cases. He seemed to mean to be truthful, but he is optimistic. He says he once saw 18 in a band, and once killed five out of seven, and all of a band of five another time. This was later in the season.

Sciurus griseus anthonyi. Seen occasionally above 4,000 alt. They were feeding on the unripe cones of spruce fir and pine. I saw nearly grown young squirrels.

Eutamias merriami. Rather common in the pine and fir forests; occasionally lower. Seen down to 3,000 alt. Some of those seen at the head of Middle Fork may have been speciosus.

Spermophilus beecheyi fisheri. Not very common above the plain. Seen up to 6,000 alt.

Peromyscus gambelii Common.

P. boylii? Rather common.

P. californicus insignis. Not very common. Chemisal.

Reithrodontomys pallidus. Rather common in the cienegas.

Neotoma intermedia? Not common.

Microtus californicus? Rather common in the cienaga.

Thomomys bottae pallidens. Common.

Perodipus a. ilis. None caught; cyclone traps upset and other traces.

Perognathus falcatus. Not common.

Mammals 3.

Lepus auduboni. Rare; saw but one.

L. cinerascens. " "

Lynx californicus Not very common. Caught one.

Canis ochropus. Not common.

Urocyon. Two caught. Tracks seen frequently.

Mephitis occidentalis holzneri. Rather common.

Screch vagrans? Four caught. The finding shrews here apparently rather common was a surprise to me. They were caught in *Microtus* runways in grass in wet, boggy cienegas. The spring water rising in these cienegas is very cold, and willows and mountain alders shade the ground more or less, making practically a boreal climate at the surface of the soil.

Scapanus californicus. None caught; runs seen.

Myotis sp.? I saw quite small bats occasionally.

Lytle Creek, California.

Birds.

July 8 to 26 1903.

Oreortyx pictus plumiferus. Plentiful. Saw several broods of young; these appear to have been all hatched in June, some early in the month, others toward the end. I several times saw a flock of nearly a dozen old birds, perhaps these did not mate this season.

Lophortyx californica vallicolap But two pairs seen. Too little open ground here for the wants of this species.

Columba fasciata. Saw but one.

Gymnogyps californicus. Saw two on South Fork and one on North Fork; all were adults, and were on the wing.

Accipiter velox Saw one.

Buteo borealis calurus. Seen; not common. *Buteo swainsoni*. Saw one. *B. swainsoni*. Saw one.

Falco sparverius deserticola. Rare.

Bubo virginianus pallidescens. Near the head of North Fork I heard what I thought was the young birds of this species.

Dryobates villosus hyloscopus. Seen occasionally.

D. nuttalli. Lower part of the canon; not common.

Sphyrapicus ruber. I saw two young of the year in the alders near the head of Middle Fork, July 23rd. Alt 6,500.

Colaptes cafer collaris. Seen rather often.

Aeronautes melanoleucus. Seen but once, at about 6,000 alt.

Trochilus alexandri. Females and immature males seen rather frequently, at 3,000 to 4,000 alt. No costae recognized.

Selasphorus rufus. A female or immature male hovered before the tent once; no other noticed.

Sayornis nigricans semipatra. Seen along the creek occasionally.

Contopus borealis. Rather common in the higher pine forests.

C. richardsoni. Rather common in the willow and alder thickets along the streams.

Empidonax sp.? Birds of this genus were occasional in the alders and willows, but I shot none.

Cyanocitta stellari frontalis. Not very common.

Aphelocoma californica. Lower part of the canon. Not very common.

Birds 2.

Nucifraga columbiana. Heard a few times in the higher parts of the mts. down to 6,000 alt.

Icterus bullocki. Lower part of the canon; rare.

Carpodacus mexicanus frontalis. Ditto.

Astragalinus psaltria. Not very common. Lower part of the canon.

A. lawrencei. Rare. Ditto.

Spizella socialis arizonae. Seen occasionally.

S. atrogularis. Saw a brood of well fledged young drinkink at a spring on North Fork, at the foot of a chemise covered hill; alt 5,000.

Junco oreganus thurberi. Seen occasionally.

Melospiza cinerea cooperi. Seen along the stream in the lower part of the canon.

Pipilo maculatus megalonyx. Not common.

P. fuscus senicula. Rather common below 4,000 alt.

Oreospiza chlorura. July 23rd. I saw a young bird in alders at 6,000 alt.

Zamelodia blythcephala. Lower part of canon; not common.

Piranga ludoviciana. Seen occasionally, principally males.

Tachycineta thalassina lepida. Seen occasionally.

Vireo gilvus. Heard occasionally.

V. solitarius cassini. Heard rather frequently.

V. pusillus. Lower part of canon; rare.

V. vicinior. Seen once, on a chemise covered hill, at about 3,000 alt

Dendroica aestiva. Rare.

D. auduboni. Saw one male on a ridge at about 6,000 alt.

D. nigrescens. Seen a few times at 5,000 to 7,000 alt.

Ceothlypis trichas occidentalis. Not common.

Icteria virens longicauda. Two males sang often in a willow thicket near camp.

Cinclus mexicanus. Saw one on Middle Fork.

Toxostoma recurvirostra pasadenense. Lower part of canon and lower chemis covered hills; not very common.

Salpinctes obsoletus. Seen rather often.

Catherpes mexicanus punctulatus. Rare.

Troglodytes aedon parkmanni. Not very common.

Birds 3.

Certhia familiaris occidentalis. Seen twice; 6,000 alt.

Sitta canadensis aculeata. Rare.

S. pygmaea. Not common.

Parus inornatus. Seen once.

P. gambeli. Seen rather often.

Chamaea fasciata. Rather common in the chemisal.

Psaltriparus minimus californicus. Seen occasionally.

Hylocichla guttata auduboni. Identified by its song; not shot. One or a pair, the latter probably, frequented a dark, cool mountain alder grove near camp. A cold spring stream passed through the grove.

Alt. 3,000 feet. This must be a very low summer locality for this species. The song ceased about the 20th of July.

Sialia mexicana occidentalis.

San Bernardino Mts. Cal.

General Description.

This range consists of two somewhat distinct parts. That part south of the Santa Ana River is considerably the highest, rising to over 11,000 feet altitude, and is bold and rocky. This part I did not visit this summer.

The northern part is longer and lower. It is a rough plateau, with a steep face to the southward; a hilly, broken top 5 to 10 miles wide; and with the Mojave Desert side sloping less steeply than the south face. The base level on the San Bernardino Valley side is 1,000 to 1,500 feet above sea level; that of the Mojave Desert side is 2,500 to 3,000. The general altitude of the plateau is 5,000 to 7,000, highest eastward. Few points reach 8,000.

The south slope is thickly coated with brush (chemisal), with some *Pinus tuberculata* in places. The summit of the range is heavily clothed with forest, nearly all being conifers, mostly pine, which has been cut on for lumber for many years - hence this part of the range is often spoken of locally as the Mill Mountains. The Desert slope is moderately well timbered, principally with pinon and juniper. The pinon comes into the eastern end of Bear Valley, reaching two or three miles over the divide. There is considerable *Artemesia* in Bear Valley and some in other places. Most of this northern part of the range drains into the Mojave Desert, but Bear Creek, draining Bear Valley, is a branch of the Santa Ana River.

There are five roads leading from the San Bernardino Valley into this part of the range, but two are practically abandoned. A good road runs along the crest, connecting all the others. We went up the Arrowhead road, the most western now in use, and along the crest to the eastern end of Bear Valley, a distance of about 40 miles, then down by the Santa Ana canon road.

Squirrel Inn is above Arrowhead, on the crest. I spent a few days there in May. Little Bear Valley is three or four miles north east of Squirrel Inn. This is the center of the logging district, and a large part of the surrounding timber has been cut. Deep Creek is the main mountain branch of the Mojave River. It heads near Bear Valley and one of its branches drains Little Bear Valley. It lies in a deep

canon in most of its course. Bear Valley is much the largest level area in the whole range. It is the site of the Bear Valley Water Co. reservoir, which when full is half a mile wide by four miles long, but at the time of our visit was not much more than half full. Because of the very low stage of water for several years waterfowl have nearly quit coming here.

The summits of this northern part of the range scarcely reaches up to the Canadian zone. There are a few small groves of *Pinus murrayana* south of Bear Lake.

San Bernardino Mts. California.

Mammals.

July 30 to August 15 1903.

Odocoileus hemionus californicus. A male shot at Little Bear Valley was in the red pelage, with antlers in the velvet. I saw three deer singly in thick brush in Bear Valley Aug 12th. but failed to get a shot at either. Two appeared to be in brown coats, the other was more red in color. I saw a few tracks in other places.

Sciurus griseus anthonyi. Very scarce in these mountains this year. I saw but two, but heard others.

Eutamias merriami. Rather common up to 6,000 feet alt., rare higher.

E. speciosus. Common around Bear Valley; not many seen elsewhere.

Prefer rough, brushy localities above 6,000 alt. A female caught August 15th. appeared to have bred, and contained four small foetus

Callospermophilus bernardinus. Rather common on the ridge south side of Bear Valley; few seen elsewhere. Two shot were sitting upright on boulders, eating. One had a mushroom but I failed to find the food of the other. Some were trapped in open level forest, but the preference seemed to be for the neighborhood of rock masses. Saw few adults.

Spermophilus beecheyi fisheri. More or less common in the valleys.

Sciuropterus californicus. The only one found was taken near Little Bear Valley May 27th. from the same stub (pine) from which Herron took one of Rhoads specimens. Herron tells me that he sent Rhoads four skins, all taken in that neighborhood. This pine stub had two old woodpecker holes, one 25, the other 40 feet from the ground. My companion pounded the stub with an axe, and the flying-squirrel ran out of the lower hole and up toward the other, but I shot it before it reached the hole. This was the method by which Herron got his specimens. I pounded many more stubs in various places but saw no more of the animals.

Peromyscus gambeli. Rather common. Seems to be more generally distributed in the se mountains than any other species of the genus.

P. boylii. Not common. I got but one in the Bear Valley end of the range.

P. major. Taken in May at Squirrel Inn, the type locality. Apparently not common.

Mammals 2.

Neotoma (intermedia?). Rather common in the pinons at the east end of Bear Valley. The nests were not in rocks, but were piles of twigs and pinon cones placed at the foot of living pinon trees, or on the pedicels of fallen dead pinons. I saw no traces of *Neotoma* elsewhere on the range.

Microtus (californicus?) Common in the mountain meadows southwest of Deep Creek; no traces found in the cienega at the head of Bear Valley. Caught three in a cienega on the ridge south of Bear Valley at 7,500 feet alt.

Thomomys altivallis. More or less common everywhere in the mountains. Very abundant in Bear Valley and some other places. Some specimens were very large, and I had several traps dragged into the big burrows. One of these I did not recover, giving it up after an hour digging. I could easily run my hand into the burrow to arms length.

I trapped in the type locality of *Perognathus alticola*, but did not get any, although Herron told me the exact locality where he got his specimen.

Lepus texianus deserticola. Common in the eastern end of Bear Valley, among pinons and *Artemesia*, alt. 7,000. I saw tracks above Fredalca in a tract logged off and now grown up with *Artemesia*. Residents of Little Bear Valley said a 'big jackrabbit' occurred there in small numbers, and that it became white in winter. I take it to be *deserticola*. I saw none of the small hares in the mts.

Lynx californica. Saw only a few tracks; evidently rare.

Urocyon californicus. Rather common; most so in places where patches of chemisal are mixed in with pine forests.

Mephitis occidentalis holzneri. Not common. Caught but one, and saw tracks in but two other places.

Scapanus californicus. But one mole run seen.

Found no shrews nor any indications of their presence altho I trapped particularly for them.

Myotis sp.? I saw a few small bats but they flew very high and I got none.

Vesperomys fuscus. Rather common.

San Bernardino Mts. California.

Birds.

July 30 to August 15 1905.

As the birds were beginning to moult I shot very few and did not attempt to make an exhaustive list.

Waterfowl were much more numerous when I was at the lake in 1886.

Colymbus nigricollis californicus. Several seen; some with broods of young.

Erisomatura jamaicensis. Scarce.

Fulica americana. Not very common.

Oreortyx pictus plumieri. More plentiful than I ever saw them before, the result of the prohibition of shotguns in the forest reserve. I saw many broods of young.

Cathartes aura. Not common.

Zenaidura macroura. Saw a few in Pear Valley. Not noticed elsewhere.

Buteo borealis calurus. Saw perhaps half a dozen.

B. swainsoni. Saw three in as many different localities.

Aquila chrysaetos. Saw two in Pear Valley.

Falco sparverius deserticola. Occasional.

Bubo virginianus (pacificus?). Heard a pair in Pear Valley.

Dryobates villosus hylocopos. Saw but three or four.

Xenopicus albolarvatus. Rare.

Sphyrapicus thyrooides. Saw one immature male.

Colaptes cafer collaris. Occasional.

Woodpeckers were very scarce, and east of Little Pear Valley I saw very few woodpecker holes in the trees. I can see no reason for the scarcity of this group of birds as conditions were favorable for their subsistence.

Phalaenoptilus nuttalli. Heard only in Pear Valley.

Chordeiles virginianus henryi. Seen in most parts of the mountains, but they were not particularly common.

Trochilus alexandri. Abundant in the patches of blossoming Pentstamens; more or less common elsewhere.

Calypte anna. Rather common at Little Pear Valley. I did not recognize any *C. costae*.

Birds 2

Selasphorus rufus? or *S. allenii*, probably the former. Saw several immature males and females at Little Bear Valley.

Myiarchus cinerascens. Saw two.

Sayornis saya. Saw perhaps half a dozen.

Contopus borealis Rather common.

C. richardsoni. Shot one.

Empidonax hammondi. "

Cyanocitta stellari frontalis. Common.

Aphelocoma californica. Saw two in Bear Valley.

Nucifraga columiana. Saw a number in Bear Valley.

Cyanocephalus cyanocephalus. Common in the pinons in the eastern of Bear Valley.

Sturnella magna neglecta. Rare. Bear Valley only.

Scolecophagus cyanocephalus. Rather common in Bear Valley.

Carpodacus cassini. Females and immature males were common in several places. Adult males were scarce. Those distinctly seen I feel sure were cassini. None shot.

C. mexicanus frontalis. Bear Valley. Rare.

Spizella socialis arizonae. Recognized only in Little Bear Valley, where they were rather common in the timber.

S. breweri. More or less common in all the valleys; abundant in Bear Valley.

Junco oreganus thurberi. Common.

Passerelle iliaca stephensi. Saw a few east of Deep Creek in Ceanothus brush.

Pipilo maculatus megalonyx. Not common.

P. fuscus senicula. Rather common in the foothills.

Oreospiza chlorura. Seen several times in the hills around Bear Valley.

Guiraca caerulea eurhyncha. Saw an adult male in Bear Valley August 10th.. Migrant?

Petrochelidon lunifrons. Abundant in Bear Valley, where I saw nests attached to the bodies of pine trees at the under side of branches. One pair were feeding young Aug. 12th.

Tachycineta thalassina. More or less common throughout the mts.

Lanius ludovicianus gambeli. Saw one in Bear Valley.

Birds 3.

Dendroica auduboni. Seen occasionally around Bear Valley.

Salpinctes obsoletus. Not common.

Catherpes mexicanus punctulatus. Saw several.

Thryomanes bewicki spilurus. Not common.

Troglodytes aedon parkmanni. Saw three or four.

Certhia familiaris occidentalis. Saw perhaps half a dozen.

Sitta carolinensis aculeata. Not common.

Sitta pygmaea. Common about Bear Valley; few seen elsewhere.

Parus gambeli. Seen occasionally.

Psaltriparus minimus californicus. Saw one flock in Bear Valley.

Merula migratoria propinqua. Saw a few.

Sialia mexicana occidentalis. Common.

S. arctica. Two young of the year shot and others seen in Bear Valley.

Chuckawalla Mts. California.

General Description.

This is a desert range lying mostly in Riverside County, the extreme southern part being in San Diego County. The range is mostly granite, but in places there are other formations, some of these being metaliferous. The vegetation is similar to that of most low desert ranges, such as shrubs of pala verde, acacia, larrea, ironwood, etc.; a moderate amount of cactuses; galleta and other small perennials. No pinons or junipers occur. The higher peaks of the range reach nearly ~~near~~ or quite 4,000 feet alt. The plain at the southern side lies at about 2,000 alt., while that on the northeastern side is nearly a thousand feet lower. At the southeastern end of the range is Chuckawalla Spring, in comparatively low hills at about 2,000 alt. and 40 miles from the Colorado. 25 years ago when the stage line was in operation a station was maintained here. This has been deserted many years. The "spring" used is a walled up well, now five feet down to the water. At two points near the coyotes had scratched down to water, but no bighorns or deer were watering there, nor could they well do so now. Probably after a rainy season plenty of water is obtainable there by wild animals. A dozen miles westward is another spring that I did not visit, as it is not near any road. 30 miles west of Chuckawalla Spring a road comes in from the northeast from the mining camps of the Red Cloud Company. I went on to Salton and got supplies and coming back to the forks took the road to the mines. The first water from Dos Palmas Spring (6 miles from Salton) is Mill Spring (25 miles) the headquarters of the mining Co. (alt. 2100). The Superintendent (E. H. ^{Colt} ~~Colt~~) advised me to go across the mountains to their camp at Corn Spring (11 miles), where a band of bighorns had been watering all summer, until the recent rain and gave me a letter to the man in charge there directing him to assist me. Corn Spring lies at about 1400 alt. on the northeastern slope and 6 or 8 miles below the divide and about three miles up the canon from the open desert. It is about 20 miles northwest of Chuckawalla Spring. It is a small ciénega used as a garden by the mining Co. Johnson had been there ~~some~~ ^{some} months, alone much of the time. He accompanied me next morning to some "tanks" three miles southwest up the mountain, alt. 2300. These tanks had been filled

General Description 2.

by a "cloudburst" three weeks previously. This heavy thunderstorm had been limited to a very small area, and within this area the galleta grass was ~~very~~ green. Here the bighorns had concentrated and we shot three.

Johnson told me that McCoys Spring was said to be the best hunting ground. It lies 25 miles north north east across the the plain, in another range.

I directed all my efforts here to obtaining bighorns and will confine my mammal notes to this species. I paid no attention to birds which were few in number and species and appeared to be of no special interest.

Chuckawalla Mts. California.

Ovis nelsoni.

Johnson gave me considerable information on the habits of the bighorns as he had noticed them during the summer; this I will summarize, as I believe him reliable. The garden he had care of was on a low point in the fork of the wash at the lower end of a sort of mesa. A hundred yards below the garden points of the mountain came down from each side forming a short low canon, the same wash between the ~~butts~~ being about 50 yards wide. The waste water from the garden ran just to the upper end of this wash before sinking in the sand. Here the bighorns came to drink almost daily, sometimes singly or in pairs in twos and threes, and a month previous to my visit Johnson counted fourteen in one band. They came down the rocky points on one side or the other, never up the wash. They approached slowly and left as soon as their thirst was satisfied. They did not pay much attention to Johnson, sometimes drinking within a hundred yards of him at work in plain sight. Johnson had a good .30 cal. Winchester and I asked him why he did not shoot one. He said he could not use it all and that the company had to furnish him provisions, but I thought that part of the reason was that he was afraid of being caught and fined, for he shot one for me willingly enough when he found he could do so safely. Johnson says he has heard the bighorn bleat, that the sound is much like that ~~as~~ made by domestic sheep but coarser.

My personal experience with bighorns in the Chuckawalla Mountains is as follows; August 25 1902 Johnson and I went up southwest about three miles to some tanks near the Pilot mine, Alt 2300 feet, getting there about ten o'clock. The slope to the right of the gulch, looking up, was steep and comparatively smooth. While that to the left, over which the trail passed, was furrowed by ravines having the intervening ridges mostly capped with low cliffs or strings of big boulders. The "tanks" were three or four hollows in the granite of the main wash, containing a few barrels of rain water, now being rapidly exhausted by evaporation in the hot sunshine.

Coming to the top of the last ridge before reaching the tanks, Johnson, who was in the lead, stopped, stopped saying "there is a sheep". It was standing broadside to us on a big boulder on the point above the lower tank.

Ovis nelsoni. 2.

We went down to Corn Spring and got two burros to fetch our game to camp. A young man who had come over from the other camp in the morning went up with us Johnson turned down into the gulch to get his ewe and Bob and I went

Ovis nelsoni 3.

on for mine. Just as we got to the place where I first fired at the ewe in the morning we saw a kid, ewe and ram running up a ridge above us. The ram stopped on the summit of the ridge about 300 yards away. I fired and fortunately shot him through the lungs. He ran about 200 yards and fell dead. Limp as he was Bob and I could not lift him into the pack saddle without first pulling him up onto a big boulder. We thought he weighed nearly 200 pounds with his entrails cut. His stomach contained a considerable quantity of water as well as much grass.

Altogether we saw nine bighorns, unless the last three were some of those we saw in the forenoon. They did not seem shy and probably had been hunted out little. My impression is that the bighorns in this region feed mostly mornings and evenings, and are not nocturnal to any extent great extent; That when undisturbed they drink in the middle of the day, daily if the water is handy, but if not convenient they may not go to water for several days at a time: that when they can get green gallata (galyéta, Spanish for cracker) they prefer that food. Johnson says he does not think the bighorns ever drank at Corn Spring in the night; all he saw drank in the afternoon between the hours of two and five. I think if no one had been staying at the spring some would have drank there in the forenoon. Johnson thinks the lambing season is February; from statements made to me by others I think it probable that it commences then and continues into April or later. The ewes we got showed no signs of the commencement of the rutting season, but the sexual organs of the ram were very large though perhaps but normal.